Integrated Circuit for Contactless Identification System with ISO15693 data exchage protocol .

(functional equvivalent of SL2ICS11 ф.Philips)

IZ2817 - Integrated Circuit for contactless identification system with ISO15693 data exchage protocol, is purposed for usage in Radio Frequency Identification(RFID) Smart Label built-in cheap paper labels which serve basically for replacement of a standard stroke-code. Radio-frequency identification is considered as more perfect system in comparison with stroke-code as it more flexible and can contain more information.

Application spheres: identification of a luggage at the airports, books in libraries, clothes in shops, museum displays, a foodstuff etc.

The external coil is connected to the microcircuit for creation of the contactless label. The built-in radio channel receives a signal induced in the aerial by external radiation This signal is used by power supply unit to generate supply voltage & by control unit to separate clocking signal.

Main features

- 192 bit (24 pages x 1 bytes) EEPROM   ;
- 100,000 memory program/erase cycles;
- Contactless power supply & data transfer;
- Operating field frequency 13,56 MHz;
- Data transfer rate 56kbaud;
- Built-in resonance capacitry 20 pF $\leq C_R \leq$ 27 pF;
- Data exchange protocol meet international standard ISO 15693;
- Anticollision function support with high speed of identification;
- Internal DC voltage limitation to prevent identifier mark fail in power electromagnetic field.;
- Internal circuit clocking by means of separation of clock pulses from external electromagnetic field;
- Data storage without power supply (non-volantive memory);
- Data transmittion by method of load modulation
- Demodulation of the amplitude-modulated data received from the reader with a modulation index in limits from 10 to 30 %.
- Temperature range -40 … +85 ^{o}C;
- ESD protection up to 2000 V;
- Latch current not less than 70 mA for 25 ^{o}C temperature;

Tab.1 Contact pad description

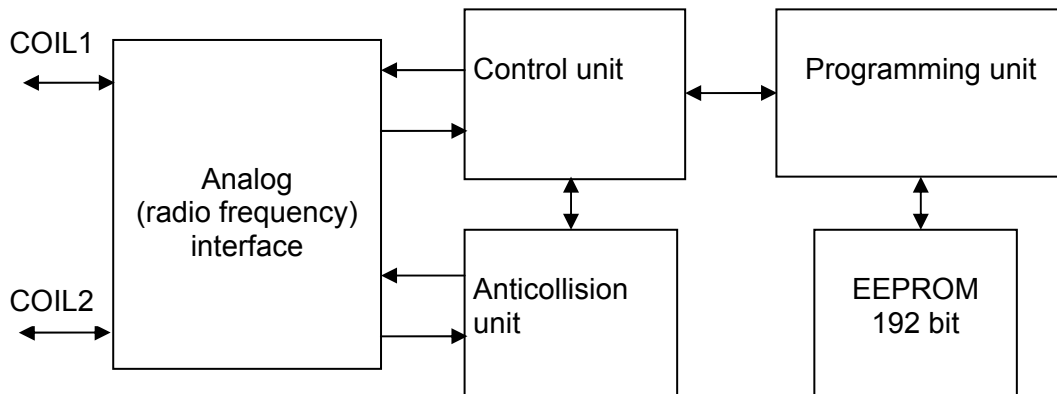| Contact pad number	Symbol	Function
01	COIL1	Coil connetion I/O
02	COIL2	Coil connetion I/O
03	GND	Common
04	DATA	Data output (testing)
05	V_{CC}	Power supply
06	TEST	Test pad
Note – Contact pads 03-06 (GND, DATA, V_{CC}, TEST) are purposed only fo testing during IC manufacturing and are not used by customer		

Fig.1 – Block diagram

Tab.2 Recommended operation modes

Symbol	Parameter	Value		Unit
		min	max	
U_{CC}	Power supply voltage	2,9	3,6	V
U_{COIL}	External coil alternating voltage – pins COIL1, COIL2	2,9	-	V
I_{COIL}	External coil current – pins COIL1, COIL2	-	30	mA
f_{COIL}	Operating frequency	12,93	14,30	MHz

Tab. 3 Maximum ratings

Symbol	Parameter	Value		Unit
		min	max	
U_{CC}	Power supply voltage	-0,3	3,7	V
I_{COIL}	External coil current – pins COIL1, COIL2	-	60	mA

Tab. 4 – Electric parameters Ta -40 … +85 ^{o}C

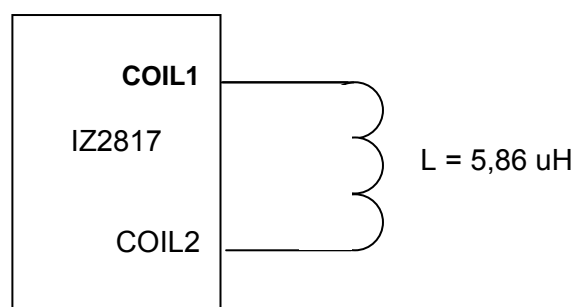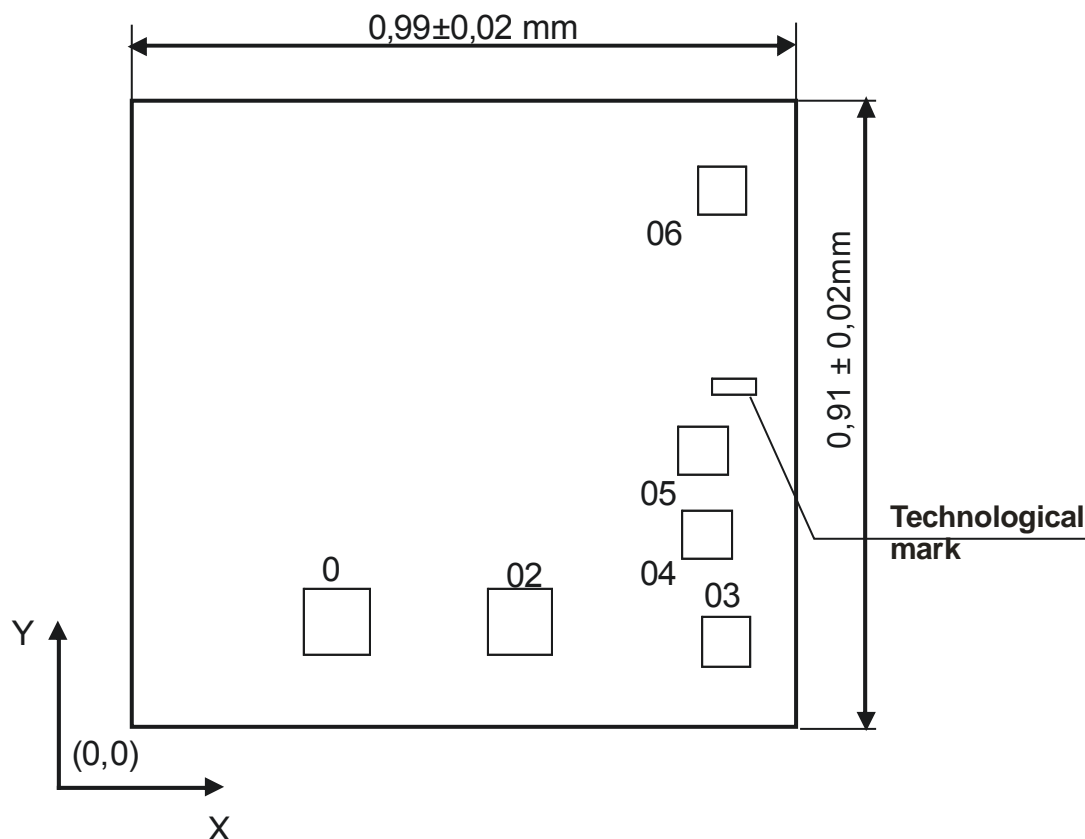| Symbol	Parameter	Mode of testing	Value		Ambient tempera-ture, °C	Unit
			min	max		
I_{CC}	Consumption current	U_{CC}= 2,9 V	-	$\frac{97}{100}$	$\frac{25\pm10}{85}$	uA
		U_{CC}= 3,6 V	-	$\frac{450}{500}$	-40	

Fig. 2 – Application diagramm

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Contact pad location diagramm

ICs is shipped in chip form with fixed orientation (sticked on film)
Weight of ICs not less than 0,0004 g

Chip thickness 0,18±0,01 mm.
Coordinates of technological mark 2817, mm: x=0,876, y=0,442.

Fig. 3 – Contact pad layout

Table 8 – Contact pads location & dimensions

Contact pad number	Symbol	Coordinates (ref. to left bottom corner), mm	
		X	**Y**
01	COIL1	0,304	0,067
02	COIL2	0,591	0,067
03	GND	0,856	0,062
04	DATA	0,830	0,183
	V_{CC}	0,834	0,290
	TEST	0,858	0,778
Note – Contact pads 01, 02 dimensions 0,090x0,090 mm; and test pad 03-06 dimensions 0,070x0,070 mm are indicated under «Passivation» layer			

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